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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,498	09/29/2005	Francois Figueras	0512-1252	5390

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EXAMINER	
SMITH, JENNIFER A	

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,498	FIGUERAS ET AL.	
	Examiner	Art Unit	
	JENNIFER A. SMITH	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 6-43* is/are pending in the application.

4a) Of the above claim(s) *9-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-8 and 28-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/30/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

Applicant's election with traverse to prosecute the invention of Group I (claims 1-8 and 28-43) in the reply filed on 11/28/2008 is acknowledged. The traversal is on the ground(s) that the unifying feature of the invention (solid comprising a single layer of tungsten oxide on a support) is not disclosed or suggested by the Yori et al. reference. This is not found persuasive because the catalyst solid can be prepared via many different methods like those taught in the Yori et al. reference. The requirement is still deemed proper and is therefore made FINAL.

Claims 9-27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 11/28/2008.

Claims 4-5 are canceled.

Claims 1-3, 6-8, and 28-43 are presented for examination.

Claim Objections

Claim 1 recites the limitation "the amount of tungsten" in line 3. There is insufficient antecedent basis for this limitation in the claim. Applicant's claim 1 recites a "tungsten oxide" species. Tetrahedral form refers to molecular geometry. It appears that Applicant is claiming the geometry of an atom.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 6-8, 28-30, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaudagna et al. (Applied Catalysis, 1997).

In regard to claim 1, Vaudagna et al. teach tungsten oxide on a zirconia support [See Abstract]. The catalyst (IT form) exhibits 62-69% tetragonal phase [See Table 1]. The sample is prepared by impregnation of the dried hydroxide support with a tungstic acid solution. With regard to these process limitations, "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or

obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113. The tungsten catalyst disclosed in the Vaudagna reference is substantially the same product as claimed and the process utilized to obtain the product is given little patentable weight.

In regard to claim 2, the specific surface area of the IT form catalyst is 54-55 m^2/g after heating to 830°C. With regard to the different heating temperatures, "generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)". See MPEP 2144.05 IIA.

In regard to the claim limitation to "10-25% by weight tetrahedral form" before and after calcination of the tungsten, Vaudagna et al. observe that the nature of surface tungsten species on WO_x-Al_20_3 depends on the amount of WO_3. For concentrations below 15% there appear tetrahedrically coordinated species of the WO_4^{2-} type; for concentrations between 15% and 24% appear octahedric polymeric WO_3 species in addition to the tetrahedric ones. Above 24% WO_3, which corresponds to the monolayer (4.3 W atoms nm^{-2}), bulk WO_3 crystallites are formed [See Page 270]. One of ordinary

skill in the art would recognize a tungsten species, deposited on a similar oxide support (ZrO_2) at 20 wt% [See Table 1, IT] would contain both tetrahedral and octahedral structures. The specific weight percent is not explicitly disclosed but the solid taught by the Vaudagna reference is substantially the same as Applicant's claimed solid and one would expect a similar value with regard to the molecular geometry of the tungsten oxide.

In regard to claim 6, Vaudagna et al. teach the solid is on a zirconia support [See Abstract].

In regard to claim 7, Vaudagna et al. teach additional platinum catalyst on the tungsten-zirconia solid [See Pt/WO_x-ZrO_2 in Table 1].

In regard to claim 28, Vaudagna et al. teach 20 wt. % tungsten oxide on a zirconia support [See Table 1].

In regard to claims 8, 29, 30, 42, and 43, Vaudagna et al. teach the catalysts are heated to temperatures of about 800°C. With regard to the different heating temperatures, "generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or

workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)". See MPEP 2144.05 IIA.

Claims 3, 31-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaudagna et al. (Applied Catalysis, 1997) in view of Sohn et al. (Langmuir, 1998).

In regard to claim 3, Vaudagna et al. do not explicitly teach the acidity of the catalyst. The super-acidity of the material is attributed to the W-O-Zr species formed between WO_3 and ZrO2 [See Page 279, Column 2, First Paragraph].

Sohn et al. disclose different characterizations of prepared tungsten-oxide-zirconia catalysts. Figure 8 shows the relationship between acidity and WO_3 content. Vaudagna et al. disclose tungsten wt. percents (17.6-21.6 wt. %) within the required range of acidity (0.1-0.5 mmol/g) and one of skill in the art would recognize a catalyst like those described in the Vaudagna reference would have acidities above 0.1 mmol/g.

In regard to claims 31, 32, 35 and 36, Vaudagna et al. do not explicitly teach specific surface are within the claimed ranges.

Sohn et al. disclose different characterizations of prepared tungsten-oxide-zirconia catalysts. Figure 6 shows the relationship between surface area and WO_3

content. Vaudagna et al. disclose tungsten weight percents (17.6-21.6 wt. %) within the required range of surface area (86-150 m^2/g) and one of skill in the art would recognize a catalyst with a high specific surface area would result in increased catalytic activity by providing more surface points of contact between the catalyst and material being catalyzed.

In regard to claims 33 and 34, Vaudagna et al. teach the catalysts are heated to temperatures of about 800°C. With regard to the different heating temperatures, "generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)". See MPEP 2144.05 IIA.

In regard to claims 37-39, Vaudagna et al. do not explicitly teach the acidity of the tungsten-zirconia material.

Sohn et al. teach the acidity of zirconia-tungsten catalysts. This value can range from 0.1 to 1.62 mmol/g [See Page 6145, First Column, First Paragraph].

One of skill in the art would have been motivated to produce a catalyst with a high acidity value because acid sites are responsible for catalysis in certain hydrocarbon reactions and one would have been motivated to provide a catalyst with values within the claimed ranges for optimal catalytic activity.

In regard to claims 40 and 41, Vaudagna et al. teach the catalysts are heated to temperatures of about 800°C. With regard to the different heating temperatures, "generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)". See MPEP 2144.05 IIA.

Conclusion

Claims 1-3, 6-8, and 28-43 are rejected.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. SMITH whose telephone number is (571)270-3599. The examiner can normally be reached on Monday - Friday, 8:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.A. LORENGO/
Supervisory Patent Examiner, Art Unit 1793

Jennifer A. Smith
February 18, 2009
Art Unit 1793

JS